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Space Station Gets New Life as International Collaboration Grows

By Charlene Porter | Staff Writer | 09 January 2014

Washington — The Obama administration announced January 8 that it will support a four-year extension of operations at the International Space Station (ISS) and urged its international partners in the enterprise to do likewise.

In their joint announcement of the extension, Assistant to the President for Science and Technology John Holdren and NASA Administrator Charles Bolden said continued ISS operations are necessary to sustain the pursuit of important goals in human space exploration.

"NASA has determined that research on ISS is necessary to mitigate fully 21 of the 32 human-health risks anticipated on long-duration missions," according to a statement jointly issued by Holdren and Bolden. "A related critical function of ISS is testing the technologies and spacecraft systems necessary for humans to safely and productively operate in deep space."

The statement also emphasized the important contributions ISS scientific collaboration has made to breakthroughs that are already improving life on Earth. Research on board the orbiting space lab has contributed to improvements in vaccines, delivery methods for cancer drugs and robotic surgical techniques, for example.

Elaborating on the decision in an appearance at an international meeting on space activity January 9 at the State Department in Washington, Holdren said the ISS provided fundamental research in development of a water-purification technique that is being used to address water shortages in disaster areas.

Another policy goal for the Obama administration is the development of a commercial space industry. The 13-year-old ISS serves as a first hop for companies developing the capability to launch space payloads. Two private U.S. companies so far have staged successful missions to the station.

With complex observational and data-collection instruments on board, the ISS is also providing important data to improve scientific understanding of the Earth, its atmosphere and changing climate, the U.S. officials say.

With the involvement of scientific agencies from 15 nations, "this unique orbiting laboratory is a clear demonstration of the benefits to humankind that can be achieved through peaceful global cooperation," the Holdren-Bolden statement said.

The White House announcement in favor of extending the space station's lifetime came just as the International Space Exploration Forum (ISEF) convened in Washington January 9. With representation from 35 space-faring nations, the meeting is dedicated to building political support for global cooperation in space exploration.

Deputy Secretary of State William Burns welcomed the international assembly and underscored how the ISS — "the most complex cooperative scientific and engineering project in history" — has demonstrated that nations can cooperate in pursuit of shared goals. The ISEF must increase that cooperation, Burns said.

"If we choose to put our collective strength behind cooperative efforts rather than competing efforts, the opportunities are as vast as the solar system itself," Burns said.

As he encouraged more nations to join the ISS partnership, he said the ISS serves as the stepping-off point for human exploration to Mars and beyond. Burns echoed the White House priority for the ISS role in developing a private space sector. Further, the space station can serve as the planet's first line of defense against collision with near-Earth objects and space debris.

Representing President Obama at the ISEF meeting, Holdren said the ISS experience will further contribute to NASA's design of an asteroid mission. Envisioned as a journey to identify, capture and redirect an asteroid into an orbit just beyond the moon, this initiative "will raise the bar on what humans can do," Holdren said, and provide a "practice platform" where astronauts will be able to develop and refine techniques and skills that will enable further exploration into the outer reaches of the solar system.

Other opening speakers at the ISEF meeting included representatives of space agencies in Italy, the European Union and Japan. All affirmed the assertions by U.S. officials that space exploration is part of human destiny, an incubator for innovation and technologies that can have great benefit on Earth.

Leaders of 30 space agencies from around the world including those from China, Germany and Russia are attending the ISEF meeting.

U.S. Supports International Efforts to Aid Syrian Refugees

By Jane Morse | Staff Writer | 08 January 2014

Washington — As violence in Syria enters its third year, the needs of its refugees — and of neighboring countries providing them refuge — are greater than ever, U.S. officials say, and the United States is supporting

international efforts to provide aid.

More than 9.3 million people — more than 40 percent of Syria's population — require humanitarian assistance, according to Nancy Lindborg, an assistant administrator at the U.S. Agency for International Development (USAID).

"In just the last year, the number of people displaced inside Syria has quadrupled from 1.5 million to more than 6.5 million," she said at a January 7 hearing of the U.S. Senate Judiciary Subcommittee on Constitution, Civil Rights and Human Rights.

"More Syrians are now internally displaced from their homes than anywhere else in the world. An additional 2.3 million Syrians have fled to neighboring countries in search of safety," Lindborg said.

Although the governments and citizens of neighboring countries such as Lebanon, Jordan and Turkey have welcomed Syrian refugees, their generosity is being strained to the limits, according to Anne Richard, assistant secretary of state for population, refugees and migration.

Testifying with Lindborg at the hearing, Richard said the governments of Syria's neighbors are concerned that they must stretch the services they provide to their own citizens to reach the overwhelming numbers of vulnerable refugees living in their countries.

"Schools have moved to double shifts to accommodate Syrian children," Richard said. "Hospital beds are filled by Syrian patients. Rents have risen and wages have fallen as a result of the competition for housing and jobs. There are water shortages in Jordan and Lebanon."

The State Department and USAID are major funders of the top humanitarian organizations responding to the crisis, Richard said, providing more than $1.3 billion in assistance to date.

Richard said that among the U.N. agencies and nongovernmental organizations working with U.S. support to aid Syrian refugees are the U.N. High Commissioner for Refugees, the U.N. World Food Programme, UNICEF and the United Nations Relief and Works Agency for Palestine Refugees in the Near East.

"Together, these agencies and others are providing food, clean water, shelter, medical care and other basic essentials," Richard said. "They also go beyond these basic needs and seek to protect the most vulnerable members of Syrian society today — displaced children, at-risk women and girls, the elderly and the disabled — from threats as diverse as cold winters, unsafe play areas, poor sanitation, child marriage and violence against women and girls."

In December 2013, Valerie Amos, the U.N. under secretary-general for humanitarian affairs and emergency relief coordinator, announced the largest-ever appeal for a single humanitarian emergency: $6.5 billion for Syria and neighboring countries in 2014. The U.N., Richard said, "has worked to make the appeals cost-efficient and high-impact, as well to provide benchmarks to help donors track progress of the refugee response. We are reviewing the appeals now and discussing with partners and other donors the best ways to support these efforts."

The Syrian people, despite their suffering under the Assad regime, will have their chance to forge their own future, said President Obama in remarks he delivered from the White House via a video January 29, 2013.

"The relief we send doesn't say 'Made in America,' but make no mistake — our aid reflects the commitment of the American people," Obama said. The Syrian people "will continue to find a partner in the United States of America."

Syrian Journalists Visit United States

08 January 2014

This blog post by Junaid Munir, a political officer at the U.S. Embassy in Paris, France, was published on the State Department website on January 7. Munir shares reflections from Zena Adi, a Syrian journalist, on her visit to the United States as part of the State Department's International Visitor Leadership Program. Munir has shared these reflections with Adi's permission.

Syrian Journalists Visit the United States
By Junaid Munir

The International Visitor Leadership Program (IVLP) program is the U.S. Department of State's premier professional exchange program. Since 1940, the program — sponsored by the Bureau of Educational and Cultural Affairs in collaboration with non-governmental organizations — has brought current and emerging foreign leaders in a variety of fields on short-term visits to the United States to experience our country firsthand and cultivate lasting relationships with their American counterparts.

The below excerpt is written by IVLP participant Zena Adi:

"In August through September 2013, I joined the IVLP with a small group of Syrian journalists and Syrian activists for three weeks in the United States. The group visited various organizations, including media

organizations and participated in panel discussions focused on the Syrian crisis.

"The United States places a great deal of emphasis on individual rights, especially regarding freedom of information, and free access to information. Because the United States is a leader in the digital revolution and rapid new ways of information dissemination, participants in this IVLP program were able to develop their journalistic skills. This included especially in conflict reporting, thanks to visits to the U.S.-Mexico border, various TV channels, newspapers and universities.

"With the various American audiences, we discussed the cause of the Syrian revolution; the humanitarian situation that has resulted from the brutality of the regime; and the political situation in Syria, in particular, the events surrounding the time of the visit, including the possibility of American military strikes to punish the regime for using chemical weapons against civilians.

"Many Americans who have stood up for the Syrian revolution showed their support and sympathy with the Syrian group.

"One of my fellow journalists involved in the program, Syrian activist Obadah Al-Kaddri, director of Radio Watan, which opposes the Assad regime, expressed his dissatisfaction with the mismatch between American political statements and the actions of the American government.

"Some thought that U.S. policymakers only tried to present the situation in Syria to the American public when they needed to convince the Congress to adopt a resolution authorizing the strikes against the Syrian regime. It was only then that the American media presented the real situation on the ground and placed a correct emphasis on the deterioration of the humanitarian situation in Syria, and the level of brutality reached by the Syrian regime against unarmed civilians.

"But now, after the international community reached the decision to remove chemical weapons in Syria, Western media appears to be focusing on the cooperation of the Syrian regime with the international mission to destroy chemical weapons and the Geneva 2 conference, as if the criminality of the Assad regime was limited to chemical weapons only. This has ignored the fact that the regime has never stopped using all kinds of weapons against the Syrian people, such as air strikes, heavy mortars, tanks, and scud missiles, causing starvation and displacement. The regime has killed over 110,000 people, and displaced two million outside the country and five million within Syria.

"At the end of their tour, many of the participants expressed interest in participating in other program visits to the United States and stressed the importance of offering such opportunities for the largest possible number of Syrian activists who aspire to develop their journalistic skills to defend their cause and present it to the American public."

Online Course Helps English Learners Improve Skills

08 January 2014

This blog post by Evan Ryan, assistant secretary of state for educational and cultural affairs, was published on the State Department website on January 6.

Massive Open Online Course Helps English Language Learners Improve Writing Skills

By Evan M. Ryan

International students connect the United States with the world. We want international students to be successful in their fields of study and to gain a rich understanding of America. Learning the intricacies of written English increases students' chances of success in science, business, technology and much of higher education — global fields where English has become dominant.

Beginning last fall, the Department of State's Bureau of Educational and Cultural Affairs partnered with the University of California at Berkeley to launch College Writing 2x: Principles of Written English, a Massive Open Online Course (MOOC) hosted on the edX platform to help English language learners improve their writing skills. Berkeley's Maggie Sokolik teaches the course. She's an expert in teaching English to an international audience from her time as an English Language Specialist sponsored by the State Department.

Participants in this MOOC learn key critical thinking skills, as well as grammar, how to control a sentence, and how to proofread — empowering them with the educational tools for success in the classroom and beyond. In addition to offering new skills, MOOCs offer students an unparalleled opportunity to "test drive" the U.S. education system and prepare for studying in the United States. The feedback from students so far has been excellent. A student from Abidjan, Cote d'Ivoire, wrote that he would recommend the course because "It is a great means for discovering how the international universities work."

We just wrapped up the first five-week module. The course started with 55,000 students participating in the online forum from all around the world, including significant numbers from China, India, and Mexico. Twenty-eight thousand were actively participating online in the last week, and just under 8,000 students earned a certificate for the course.

But the course isn't just virtual. As part of our partnership, participating U.S. Embassies helped us launch our MOOC Camp initiative by hosting in-person, facilitated discussions in tandem with the online module of the course. U.S. embassy officials and their EducationUSA advising staff, English Language Fellows, and local community experts led these discussions.

The combined virtual and in-person approach clearly paid off. As Ms. Eve Smith, a Senior English Language Fellow who works with English teachers in Ukraine explained, "Combining an online course with face-to-face instruction provides the support that [participants] need."

If you missed the first module, don't worry. The second five-week module of the course begins on January 16, and you can take it even if you did not take the first module. Want to participate in a facilitated discussion? Get in touch with the Public Affairs Section of the nearest U.S. Embassy. We hope you will join us!

Clean Energy Technologies Advance in United States

07 January 2014

Washington — Over the last five years, American inventors and investors have made significant progress in developing and deploying key clean energy technologies, supported by the policies of the Obama administration.

U.S. electricity production from solar and wind has doubled, and in 2012, U.S. carbon pollution fell to its lowest level in nearly 20 years, according to a January 6 U.S. Department of Energy (DOE) news release. Clean energy technology costs continue to come down, while these technologies produce more energy than ever before, the release said.

"More clean energy. Greater energy security. Less carbon pollution. Those are the facts," said Dan Utech, President Obama's top climate and energy adviser.

WIND ENERGY

In 2012, wind was America's largest source of new electricity generation capacity, accounting for 43 percent of all new installations, DOE said. Altogether, the United States has deployed about 60 gigawatts of wind power — enough to power 15 million homes. This growth in wind deployment has spurred more U.S. manufacturing in this sector and, according to the American Wind Energy Association, by 2012 there were well over 80,000 workers employed in wind-related jobs in the United States.

Supported by U.S. government investments, generation of electricity from wind and solar has more than doubled, DOE said, and the costs of solar and wind technologies have come down significantly.

SOLAR ENERGY

Since 2008, the price of solar panels has fallen by 75 percent, and solar installations have increased by a factor of 13, DOE said. U.S. government support has helped to launch some of the largest solar projects in the world.

Renewable energy permitting on federal lands has gone from virtually zero to nearly 50 approved solar, wind and geothermal utility-scale projects on public lands since 2009, including associated transmission corridors and infrastructure to connect to established power grids. When built, these projects will add up to more than 13,300 megawatts — enough energy to power 4.6 million homes.

BETTER VEHICLES

Thanks to U.S. government investments and fuel economy standards, the United States has a more fuel-efficient vehicle fleet that will continue to improve, DOE said. Under new fuel economy standards proposed by the Obama administration, average fuel efficiency for cars and trucks would nearly double, reaching an average performance equivalent of nearly 55 miles per gallon (4.28 liters per 100 kilometers) by 2025.

More efficient cars and trucks are already rolling off the assembly line, thanks in part to these standards, the release said. When the standards take full effect in 2025, they will reduce U.S. oil imports by 2.2 million barrels per day and cut carbon pollution by 6 billion metric tons, which is roughly equivalent to all emissions from the United States in 2013.

In addition to improved fuel economy, advanced vehicles are gaining traction, DOE said. For example, during the first 11 months of 2013, Americans bought more than 87,000 plug-in electric vehicles, nearly twice as many as sold during the same period in 2012, and the number of these vehicles on the road surpassed 100,000 for the first time.

The market for plug-in electric vehicles has grown much faster than the early market for hybrids, DOE said, with prices falling and export markets opening up. Since 2008, it said, the cost of electric vehicle batteries — which drive the economics of electric vehicles — has dropped by 50 percent.

U.S. Army to Destroy Syrian Chemical Weapons Aboard Ship

By C. Todd Lopez | Army News Service |
06 January 2014

The article was previously published on the Defense Department website on January 3.

Portsmouth, Virginia — Some 64 U.S. Army specialists are expected to depart for the Mediterranean in about two weeks aboard an American-owned ship, the Cape Ray, to destroy chemical weapons from Syria.

The nearly 200-meter-long ship, now in Portsmouth, will travel to a yet-to-be specified location in the Mediterranean, where it will take on about 700 metric tons of both mustard gas and "DF compound," a component of the chemical weapon sarin gas. Specialists will use two new, recently installed "field-deployable hydrolysis systems" to neutralize the chemicals.

It's expected the weapons destruction will take about 90 days.

During a visit to the Cape Ray on January 2, Frank Kendall, undersecretary of defense for acquisition, technology and logistics, said preparations began before the United States even knew it was committed to the mission, or that the mission would ever materialize.

"There was a recognition that something was going to happen in Syria … that would require us to do something with those chemical materials that were known to be there," he said.

In December 2012, a request was made to determine what could be done if the U.S. was asked to participate in destruction of chemical weapons from Syria.

By the end of January 2013, a team had evaluated existing technology for neutralization of chemical weapons and recommended using the hydrolysis process. Construction of a deployable system began in February, and the first prototype was available in June. A second was available in September.

"We could have waited to see what happened and then reacted to that, or we could have moved out ahead of time and then prepared for what might happen or was likely to happen," Kendall said. "Fortunately … we took the latter course."

Aboard the ship, an environmentally sealed tent contains two FDHS units, which will operate 24 hours a day in parallel.

Each unit costs about $5 million and contains built-in redundancy and a titanium-lined reactor for mixing the chemical-warfare agents with the chemicals that will neutralize them.

About 130 gallons of mustard gas can be neutralized at a time, over the course of about two hours, for instance, said Adam Baker of the Edgewood Chemical Biological Center in Edgewood, Maryland.

The plan is not to start out on the first day at full speed, Baker said. "It's going to be a slow start. We're going to go very deliberately and safely."

The neutralization process will create about 1.5 million gallons of a toxic "effluent" that must be disposed of. Rob Malone of Edgewood said the effluent is similar to other toxic compounds that industrial processes generate. There is a commercial market worldwide for disposing of such waste, he noted.

Baker said the effluent will be acidic and will be PH-adjusted to bring it up to "above neutral." The end result will be a liquid that is caustic, similar to commercial drain openers, he said.

Malone said the plan includes a cycle of six days of disposal plus one day for maintenance of the equipment. On board will be about 220 6,600-gallon containers that will hold the reagents used in the disposal process, and will also be used afterward to hold the effluent.

"Everything will be kind of contained on the ship throughout the entire process," Malone said.

The United States has never disposed of chemical weapons on board a ship before. But it has spent years disposing of its own chemical weapons on land, using the same process that the FDHS uses. The chemical process is not new, and neither is the technology. The platform, aboard a ship, is new. This has created challenges for the team.

"This has not been done on this platform, not been done at sea," Baker said. "But it is taking the established operations we've done at several land sites domestically and internationally and is applying them here."

In the United States, the U.S. military has been destroying its own chemical weapons for years at Aberdeen Proving Ground, Maryland, and the recently closed Pine Bluff Arsenal, Alabama. Lessons from those facilities and others were used to develop the process that will be used aboard the Cape Ray.

The process for disposing of mustard gas was used at Aberdeen Proving Ground. The process for disposing of DF compound was taken from Pine Bluff Arsenal, Baker said.

"So there is no mystery about the process," Kendall said.

Malone, who has 20 years of experience destroying chemical weapons for the United States, said doing on a ship what he has done on land for two decades required some additional thought and effort. Vibration studies were done to learn how lab equipment would operate on

board a ship. The equipment had to be modified to anchor it to the ship using chains.

Rick Jordan, captain of the Cape Ray, a mariner for 40 years and an employee of contractor Keystone Shipping Company, said for this mission his crew expanded from 29 to 35. The additional six will support mainly what he calls "hotel services" on board the ship.

"We've got some really good folks on here that know how to train, and we've been training them," he said. "They've got all kinds of shipboard damage control, damage-control training and that sort of thing."

He also said there is plenty of support for spill response as well as for fire suppression.

"The whole key here is teamwork," he said. "There has been an unbelievable amount of teamwork in this whole process, from the Maritime Administration, Military Sealift Command, to the Keystone Shipping Company. I'm humbled by what is going on here. We've had about three or four days of hard training together where we've been making mariners out of them, and they've been making chemical destruction folks out of us. And we're going to continue to train. The whole trip will be a combination of production, training and being ready for the worst-case scenario."

Jordan said he has not yet received sailing orders, but estimated the time to sail to the center of the Mediterranean Sea at about 10 days.

"Weather is the single most important factor as a mariner that I have got to consider," Jordan said. "The good news for the Cape Ray is we have lots of things to mitigate weather on board."

He said the ship is equipped with stabilizers to dampen any roll. He also said that because the ship is meant to serve as a platform without a destination, he can navigate around weather if needed.

Sea trials for the mission have already begun, and the Cape Ray will do more sea trials before it departs on its mission in about two weeks. It's expected the mission will include the neutralization of about 700 metric tons of chemical weapon agents. Those agents will be transferred to the Cape Ray from Danish and Norwegian ships in a process expected to take one or two days.

"Exactly where and how that process will take place has not been finalized yet," Kendall said.

U.S. Navy assets will provide security for the ship while it conducts operations, Kendall said.

NASA Mars Rovers Add Knowledge, Inspire Young Scientists

06 January 2014

Washington — Eighth-grade students didn't have Facebook or Twitter to share news in January 2004. Bekah Sosland, 14 at the time, learned about a NASA rover landing on Mars when the bouncing-ball video caught her eye on the next morning's news feed in her Fredericksburg, Texas, classroom.

"I wasn't particularly interested in space at the time," she recalled at the end of 2013 at NASA's Jet Propulsion Laboratory in Pasadena, California. "I remember I was talking with friends, and out of the corner of my eye I noticed this thing bouncing and rolling on a red surface. I watched as it stopped and opened up, and it had this rover inside."

That animation portrayed how NASA landed the Mars rovers Spirit and Opportunity three weeks apart for missions planned to last for three months. Spirit reached Mars on January 4, 2004, and worked for six years. Opportunity landed on January 25, 2004, and is still exploring, with Sosland now on the team planning what it does each day.

"I watched that news and said, 'This is amazing: a rover on another planet!' Gears started turning in my head that day about engineering and space — thinking about a career. It was definitely a milestone in my life and something I'll always remember."

Nobody in 2004 was predicting that either Spirit or Opportunity might still be roving Mars in summer 2013, which is when Sosland joined JPL.

Most of the engineers who operated Spirit and Opportunity during the three-month prime missions in 2004 have switched to other projects, including later Mars spacecraft. Sosland is among several on Opportunity's team today who were in school a decade ago, NASA said.

Mike Seibert in late 2003 was eagerly tracking the run-up to the rover landings while an engineering undergraduate at the University of Colorado. He had even ordered cardboard 3-D glasses in anticipation of images from stereo cameras on Spirit and Opportunity.

"I was living in my fraternity's house in Boulder that January. People thought I was weird, wearing 3-D glasses and looking at those pictures from Mars," said Seibert.

Less than two years later, he was working on the rover team at JPL.

The dramatic landings and overland expeditions of Spirit

and Opportunity, NASA said, have also inspired countless students who have not gained a chance to work on the rover team, but have participated in the adventure online by exploring images from the rovers or other activities.

Though Spirit and Opportunity were built as nearly identical twins, and both succeeded in the main goal of finding evidence for ancient watery environments on Mars, their stories diverged early.

Spirit was sent to a crater where the basin's shape and apparent inflow channels seen from orbit suggested a lake once existed. Opportunity's landing area, almost exactly halfway around the planet, was selected mainly on the basis of a water-clue mineral detected from orbit, rather than landform shapes. Spirit's destination did not pan out initially, NASA said. Opportunity landed a short distance from an exposure of layered rock that within weeks yielded compositional and textural evidence of a water-rich ancient environment.

Within the initial three-month missions and without expectation of surviving a full year, each rover set out toward other destinations: hills on the horizon for Spirit and craters exposing deeper layers for Opportunity. Spirit drove a total of 7.7 kilometers, some of that with one of its six wheels not rotating, NASA said. Loss of use of a second wheel while the rover was in a sand trap contributed to the 2010 end of that mission. Opportunity has driven 38.7 kilometers and is still going.

One factor that has enabled Spirit and Opportunity to work for years instead of a few months, the space agency said, has been winds that occasionally remove some of the dust accumulating on solar panels that generate the rovers' electricity. The ground crew also became adept at managing each rover's power consumption and taking advantage of slopes for favorably tilting the rovers toward the sun during Martian winters.

By driving to outcrops kilometers from their landing sites, both rovers reached evidence about multiple episodes of Martian history. Opportunity is currently exploring outcrops on the rim of Endeavour crater, which is 22 kilometers in diameter.

"Opportunity is still in excellent health for a vehicle of its age," said JPL's John Callas, project manager for NASA's Mars Exploration Rover Project. "The biggest science may still be ahead of us, even after 10 years of exploration."

The science achievements have already provided major advances in understanding of Mars.

The rovers' principal investigator, Steve Squyres of Cornell University, Ithaca, New York, said, "When Opportunity got to the rim of Endeavour crater, we began a whole new mission. We found gypsum veins and a rich concentration of clay minerals. The clay minerals tell us about water chemistry that was neutral, instead of acidic — more favorable for microbial life, if any ever began on Mars."

"Because of the rovers' longevity, we essentially got four different landing sites for the price of two," he said.

The evidence the rovers glean from rocks may not be the only benefit, though. Sosland and Seibert may be examples of something even greater.

Squyres said, "I'm incredibly proud of the science we've done on this mission, but in the end, perhaps our most important legacy will turn out to be the young people who have seen what we've done and made career choices based on that. If an outcome of our mission is to help inspire a new generation of explorers to do even better than we did, that will be the greatest thing we could have accomplished."

(This is a product of the Bureau of International Information Programs, U.S. Department of State. Web site: http://iipdigital.usembassy.gov)